

Second hysterosalpingography in the evaluation of unilateral proximal tubal obstruction

Second HSG and PTO

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Abstract

Aim: In this study, we aimed to test how often PTO persists in the second HSG of infertile patients with unilateral proximal tubal obstruction (PTO) in the first hysterosalpingography (HSG).

Material and Methods: One hundred patients who underwent HSG during the infertility work-up and were found to have unilateral PTO were included in the study. Forty patients who accepted our proposal of expectant treatment or intrauterine insemination (IUI) were excluded from the study. The remaining 60 patients underwent a second HSG in the next cycle, and the results were compared with the results of the first HSG.

Results: Bilateral tubal patency was detected in 35 of 60 patients who underwent a second HSG for PTO confirmation (58.3%). In the remaining 25 patients, unilateral PTO persisted (41.6%).

Discussion: In patients with unilateral PTO in the first HSG, performing a second HSG before planning further examination with laparoscopy or hysteroscopy provides bilateral tubal patency in more than half of the patients.

Keywords

Second HSG, Proximal Tubal Obstruction, Infertility

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Introduction

Fallopian tube-related problems are one of the most common causes of infertility in couples applying to have a baby. Tubal pathology is found in at least one of three women diagnosed with primary infertility. Pelvic inflammatory disease, abdominopelvic surgery, ruptured appendix, a history of ectopic pregnancy, recurrent abortions or curettages may lead to injury of the tubes [1,2]. However, in many patients with tubal factor infertility, there is no clear underlying cause. Chlamydia antibodies are frequently encountered in this patient group [1,3].

Tubal pathology leads to infertility through the following mechanisms: it prevents sperm-egg meeting, the infected material in the tuba prevents implantation, healthy oocyte-pick-up cannot be done from the fimbrial tip [1-4]. Not every tubal pathology leads to equally serious infertility problems. The presence of two types of tubal pathology is accepted: distal or proximal. Distal tubal pathologies may be in the form of phimosis, incomplete or complete obstruction, or may be in the form of impaired tubal function despite healthy tubal patency [1,2]. Proximal tubal obstruction is not considered a true pathology by many authors. However, although there are established treatment protocols for distal tubal pathologies, there is no clear treatment for PTO. Therefore, the detection of PTO in hysterosalpingography (HSG) is a difficult situation to manage for both the clinician and the patient [1-4]. PTO may be a true pathology or it may be due to the following reasons: (i) Failure to inject radiocontrast material with sufficient pressure during HSG, (ii) insufficient traction to the cervix, (iii) involuntary contraction of the patient due to pain or pressure, (iv) reaction of the tubal ostia to the contrast injection in the form of contraction [1-4].

Whatever the underlying cause of PTO is, the reality of this pathology should be confirmed using other methods. Fallopian tube catheterization or laparoscopy are the two preferred methods for the evaluation of tubal patency in PTO cases [5]. However, since both methods are invasive and expensive, repeat HSG may be a more cost effective approach [4]. This study was planned to analyze whether PTO persisted in the second HSG in infertile patients with unilateral PTO in their first HSG.

Material and Methods

Primary infertile patients who applied to our IVF-clinic, who could not conceive spontaneously, were sent to HSG after anamnesis, routine hormonal evaluation and spermogram analysis. One hundred patients with unilateral PTO as a result of HSG were included in the study. Patients with secondary infertility, with a history of previous ovarian or tubal surgery, pelvic inflammatory disease, hydrosalpinx, and bilateral or distal obstruction were not included in the study. One of three options was offered to all patients with unilateral PTO in their HSG; (i) expectant management, (ii) intrauterine insemination, (iii) second HSG. While 40 out of 100 patients accepted the recommendation of expectant management or IUI (40%), the remaining 60 patients requested a repeat HSG (60%). Sixty patients were given an appointment for the next cycle for the second HSG. The only primary outcome of our study was to find out if the PTO persisted. HSG details are detailed below. The

study was started after obtaining patient consent and approval from the local ethics committee.

The same technique was used in both the first and second HSG so that the results were objectively comparable. The cervix of the patient in the supine position was visualized with a speculum. The anterior cervical lip was grasped with a single-toothed tenaculum and pulled. Following insertion of the metallic hysteroinjector into the cervical canal, 5 to 10 ml of radiopaque contrast medium was infused through the cervix into the uterine cavity, and three to six images were obtained to evaluate whether the infused contrast medium flowed through the endometrial cavity, fallopian tubes and subsequently into the peritoneal cavity. The first radiographic images were taken after the injection of 15-20 mL of oil-based contrast medium at low pressure into the patient in the supine position. An X-ray monitor was used to acquire images. If adequate opacification was not achieved or the PTO in the first HSG persisted, 15-20 mL of contrast medium was injected under high pressure. If necessary, the patient was turned from the supine position to the prone position. In the second imaging, the cervix was subjected to stronger traction with a single-tooth tenaculum. The images obtained from the first HSG and the images obtained from the second HSG were brought together and evaluated by the specialist radiologist and gynecologist, and it was recorded whether the PTO continued. Fallopian tube catheterization or laparoscopy is recommended in patients with persistent PTO in the second HSG. In both HSG procedures, no anesthetic or analgesic was used before or during the procedure. An oil-based contrast medium was used in both procedures.

Statistical analysis

Analyses of all data were performed on SPSS 21 (SPSS Inc., Chicago, IL, USA). The Mann-Whitney U test was used for analysis of continuous variables. Differences were considered statistically significant if the p-value was <.05.

Results

Sixty patients with unilateral PTO in the first HSG went to the second HSG. In the repeat HSG performed after one cycle, bilateral tubal patency was detected in 35 of 60 patients (58.3%). In 25 patients who underwent the second HSG, unilateral PTO continued (41.6%). In 35 patients in whom PTO persisted, the proximal passage could not be achieved, although the contrast agent injection was re-administered under high pressure. Again, it was determined that PTO was not resolved in HSGs performed by turning the patients in this group from the supine position to the prone position.

One of the following three methods was recommended to 25 patients with persistent PTO: (1) laparoscopy, (2) fallopian tube catheterization, (3) intrauterine insemination. As there are those who accept one of the three proposals as well as those who reject it the results of three interventions in our patients with persistent PTO were not presented in our study.

Discussion

The fallopian tubes are organs that allow bilateral germ cell transport and allow the maturing embryo to migrate back to the endometrium after fertilization. They keep the passage open with the help of tubal contractile properties and the ciliary cells

lining them. However, changes in hormonal secretion according to the cycle may reduce both the contraction and ciliary activity of the tubes, leading to obstruction of the passage with mucus and debris. In addition, the access of peritoneal contents to the tubes or the passage of blood from the tubes into the peritoneum with retrograde menstruation may also cause temporary obstruction in the tubes. Pelvic infections, endometriosis, and ovarian cysts may also obstruct the tubal passage. For all these reasons, obstruction of the passage at the proximal or distal level may be detected in one or both tubes during HSG. While distal occlusions are mostly due to an underlying disease, proximal occlusions may be transient [2-4,6].

Most of the proximal tubal occlusions detected on HSG scans develop due to debris and mucus plugs that occur in the tubes due to the physiological changes mentioned above. For this reason, in patients with PTO in the first HSG, the clinician should not be pessimistic and should inform the patient that the picture is not very important. In patients with PTO in the first HSG, it is of great benefit to perform a second HSG before confirming the obstruction with methods such as laparoscopy or tubal catheterization, which require technical experience and the use of a special set. Dessole et al [4] performed an HSG for the second time in their patients who had PTO in their first HSG and showed that the tubal passage was open in 60% of cases. Similarly, we found bilateral passage opening in the second HSG in 35 of 60 patients with PTO in their first HSG (58.3%). Lazer et al [7] performed tubal canalization in 58 patients with PTO in HSG and showed that the tubal passage was healthy bilaterally in 93.1% of cases. When all these studies and our study were evaluated together, performing a second HSG before invasive procedure in patients with PTO in their first HSG showed that the tubal passage was open in more than half of the cases.

However, tubal passage obstruction persisted in 41.6% of cases despite the second HSG. PTO persisted in patients whose passage could not be achieved, even when contrast agent injection was performed with high pressure. Changing the position of the patients and applying stronger traction to the cervix did not improve the persistence of PTO. Tubal canalization or laparoscopy was recommended for patients with persistence of PTO despite the second HSG.

Conclusion

As a result, in patients with unilateral PTO in the first HSG, approximately 60% of the passage opening is provided in the second HSG. Because of this high success rate, a second HSG should be performed before an invasive procedure can be confirmed in PTO cases. If PTO persists in the second HSG, tubal canalization or laparoscopy should be recommended. In addition, chlamydia antibody levels should be measured in these patients and positive cases should be treated.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical

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Conflict of interest

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